

## Student computer use

*Computers have become an essential tool in our society. Early exposure to computers may help students gain the computer literacy that will be crucial for future success in the workplace. Access to computers at school and at home allows students to retrieve information, manipulate data, and produce results efficiently and in innovative ways. Examining the extent to which students have access to computers at school and at home may be an indicator of how well-prepared students will be to enter an increasingly technological workplace.*

- Between 1984 and 1996, the percentage of 4<sup>th</sup>-, 8<sup>th</sup>-, and 11<sup>th</sup>-graders who reported using a computer at school at least once a week increased substantially.
- The youngest students were more likely than older students to report that they used computers at school. In 1996, 72 percent of 4<sup>th</sup>-graders reported using a computer at school at least once a week, compared to 47 percent of 8<sup>th</sup>-graders and 50 percent of 11<sup>th</sup>-graders. However, 8<sup>th</sup>- and 11<sup>th</sup>-graders were more likely than 4<sup>th</sup>-graders to report using computers every day.
- In 1996, 79 percent of 4<sup>th</sup>-graders, 91 percent of 8<sup>th</sup>-graders, and 96 percent of 11<sup>th</sup>-graders reported using a computer at home or at school to write stories or papers, a substantial increase from 1984. The percentage of students who used a computer to learn things also increased between 1984 and 1996 for all three grades.
- Students from high income families were more likely to report using a computer at home or at school than students from low income families. Between 1984 and 1993, the percentage of students who reported using a computer at school increased by similar amounts across family income levels. However, the increase in the percentage of students who used a computer at home was higher for students from families with higher incomes (see supplemental table 3-1).

### Percentage of students who reported using a computer at school, by grade and frequency of use: 1984-96

Frequency of use	Grade 4						Grade 8						Grade 11					
	1984	1988	1990	1992	1994	1996	1984	1988	1990	1992	1994	1996	1984	1988	1990	1992	1994	1996
Never	61.2	29.8	18.9	16.5	14.0	11.4	66.7	41.8	40.5	37.6	27.7	23.3	55.0	44.7	44.9	27.2	26.1	16.0
Less than once a week	12.5	17.4	14.5	22.0	15.8	16.3	17.0	22.2	19.3	23.9	26.9	29.2	20.9	24.0	26.5	31.5	30.9	34.2
Once a week	15.5	34.2	41.1	37.0	39.6	36.0	8.1	13.9	12.9	12.8	16.1	14.5	5.7	6.4	6.6	10.8	8.0	15.3
Two or three times a week	7.6	15.0	17.7	18.6	22.8	26.5	4.6	12.2	16.0	15.1	14.5	16.2	6.3	9.7	8.3	11.3	12.4	16.5
Every day	3.2	3.6	7.8	5.9	7.7	9.9	3.6	9.8	11.3	10.5	14.9	16.7	12.1	15.2	13.7	19.2	22.6	18.1

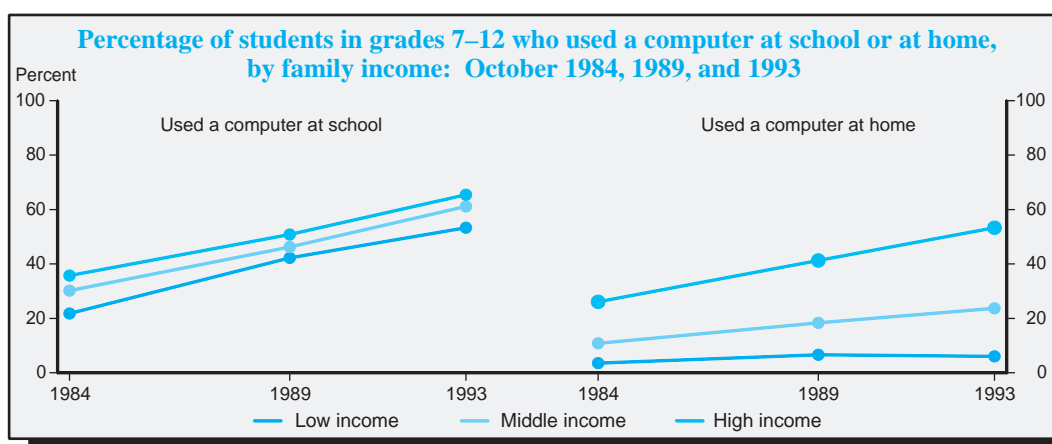
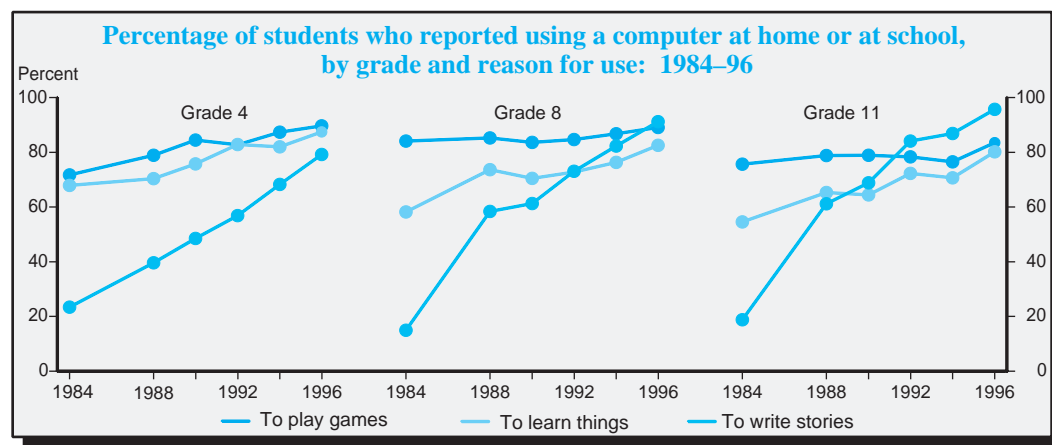
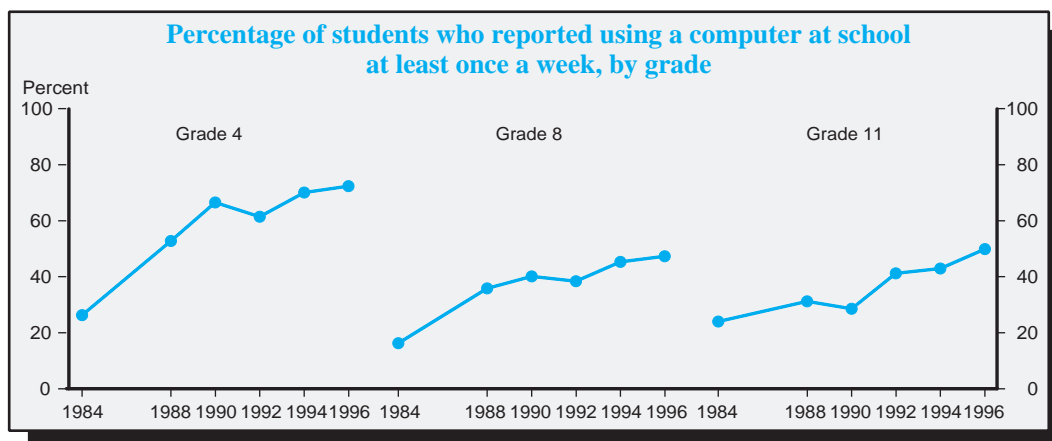
### Percentage of students who used a computer at home or at school, by grade and reason for use: 1984-96

Reason for use	Grade 4						Grade 8						Grade 11					
	1984	1988	1990	1992	1994	1996	1984	1988	1990	1992	1994	1996	1984	1988	1990	1992	1994	1996
To play games	71.8	79.0	84.5	82.8	87.4	89.7	84.1	85.3	83.7	84.7	86.8	89.1	75.7	78.9	79.0	78.4	76.6	83.6
To learn things	67.9	70.4	75.8	82.9	82.0	87.5	58.2	73.7	70.5	72.8	76.4	82.6	54.6	65.3	64.5	72.3	70.7	80.2
To write stories or papers	23.4	39.6	48.6	56.9	68.3	79.2	15.0	58.4	61.3	73.1	82.3	91.2	18.8	61.2	68.9	84.1	86.9	95.7

NOTE: Details may not add to 100.0 due to rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Almanac: Writing, 1984 to 1996*, 1998.

## Percentage of students who reported using a computer



SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Almanac: Writing, 1984 to 1996*, 1998. U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

**Table 3-1** Percentage of students who reported using a computer at school or at home, by grade level and family income: October 1984, 1989, and 1993

Current grade level and family income*	1984			1989			1993		
	Used a computer at school	Used a computer at home	Used a computer at home or school	Used a computer at school	Used a computer at home	Used a computer at home or school	Used a computer at school	Used a computer at home	Used a computer at home or school
<b>Grades 1-6</b>									
<b>Total</b>	<b>31.3</b>	<b>12.1</b>	<b>37.2</b>	<b>54.1</b>	<b>16.6</b>	<b>58.8</b>	<b>69.7</b>	<b>24.1</b>	<b>74.0</b>
Low income	19.1	2.5	20.6	40.9	3.3	42.0	59.8	4.0	60.5
Middle income	30.2	10.0	35.4	54.0	13.5	58.1	69.1	18.8	72.6
High income	43.4	25.0	54.5	64.4	34.6	73.0	78.4	51.4	87.3
<b>Grades 7-12</b>									
<b>Total</b>	<b>30.7</b>	<b>14.3</b>	<b>38.5</b>	<b>47.0</b>	<b>23.0</b>	<b>57.0</b>	<b>61.2</b>	<b>29.7</b>	<b>70.4</b>
Low income	21.8	3.6	24.3	42.3	6.6	44.9	53.3	6.1	54.8
Middle income	30.2	10.8	35.7	46.3	18.4	54.3	61.2	23.7	68.4
High income	35.8	26.1	50.4	50.9	41.3	68.9	65.5	55.3	83.0

\* Low income is the bottom 20 percent of all family incomes; high income is the top 20 percent of all family incomes; and middle income is the 60 percent in-between.

NOTE: Data shown in this table are from the Current Population Survey (CPS). The CPS is household-reported data, while the NAEP Almanac data shown in other tables in this analysis are student-reported data.

Therefore, data in this table are not comparable to data shown in the other tables of the analysis. See the supplemental note to this indicator for further explanation.

SOURCE: U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys.

**Table 3-2** Percentage of students who reported using a computer, by grade and location of use: 1984-96

Year	At home			At school <sup>1</sup>			At the library <sup>2</sup>		
	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11	Grade 4	Grade 8	Grade 11
1984	44.8	36.6	30.3	38.8	33.3	45.0	25.2	20.5	22.2
1988	45.5	46.2	39.7	70.2	58.2	55.3	27.6	39.8	37.4
1990	43.3	41.2	42.8	81.1	59.5	55.1	34.5	35.1	46.2
1992	43.0	44.0	50.7	83.5	62.4	72.8	45.6	47.3	62.1
1994	50.0	50.1	51.0	86.0	72.3	73.9	48.1	56.8	61.3
1996	62.6	61.2	63.3	88.6	76.7	84.0	61.4	66.7	72.9

<sup>1</sup> Based on the percentage of students who reported ever using a computer at school.

<sup>2</sup> School library or public library.

NOTE: Data in this table may seem inconsistent with data in table 3-1 of this analysis due to a difference in the respondents for the two sources. See the supplemental note to this indicator for further explanation.

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Almanac: Writing, 1984 to 1996*, 1998.

### Note to Indicator 3: Comparability of sources for student computer use

Two primary data sources were used for the analysis in *Indicator 3*. Each surveyed different populations for different reasons. The full citations for these data sources are as follows:

- U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Almanac: Writing, 1984 to 1996, Mathematics, 1978 to 1996, Science, 1986 to 1996, 1998*.
- U.S. Department of Commerce, Bureau of the Census, October Current Population Surveys, 1984, 1989, and 1993.

The National Assessment of Educational Progress (NAEP) Almanac data come from a survey administered to 4<sup>th</sup>-, 8<sup>th</sup>-, and 11<sup>th</sup>-graders every 2 years. The questions on computer use are background questions administered to the students along with an assessment of their skills in mathematics, science, reading, and writing. The background questionnaire asks, among other things, how much time students spend on computers and for what activities they use a computer.

The October Current Population Surveys (CPS) are administered to households each year. The computer component of these surveys is included every few years, and has questions concerning the access students in the household have to computers at school and at home. These data can be broken out by race/ethnicity and family income to provide descriptive information on who has access to computers and where computers are being used.

Because one survey is directed toward students and the other survey is directed toward heads of households, the data from the two surveys are not comparable. In fact, the difference in the respondents for these two surveys may account for the inconsistencies between data shown in supplemental tables 3-1 and 3-2, including the fact that household respondents reported students using computers at home less often than students themselves reported using computers at home.

## Standard Error Tables

**Table S3(a) Standard errors for the first text table in *Indicator 3***

Frequency of use	Grade 4						Grade 8						Grade 11					
	1984	1988	1990	1992	1994	1996	1984	1988	1990	1992	1994	1996	1984	1988	1990	1992	1994	1996
Never	3.5	4.2	2.3	1.6	2.0	1.9	4.2	3.1	2.6	2.7	2.7	2.7	2.9	2.4	2.2	2.4	2.4	1.8
Less than once a week	1.8	2.1	1.5	2.0	1.4	2.1	3.6	2.0	1.7	2.1	2.1	2.5	2.6	2.1	2.0	2.1	2.0	1.6
Once a week	3.1	3.4	2.3	2.3	3.0	2.5	2.8	1.9	1.8	1.8	1.8	1.8	1.5	1.6	1.1	1.6	1.4	1.5
Two or three times a week	1.7	2.3	2.1	1.8	3.0	3.3	1.9	1.6	1.7	2.0	1.3	1.8	1.3	1.4	1.2	1.3	1.6	1.8
Every day	1.3	1.1	1.1	1.1	1.4	1.3	1.5	1.7	1.7	1.4	1.8	1.8	2.0	2.0	1.3	1.5	1.9	1.9

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Almanac: Writing, 1984 to 1996*, 1998.

**Table S3(b) Standard errors for the second text table in *Indicator 3***

Reason for use	Grade 4						Grade 8						Grade 11					
	1984	1988	1990	1992	1994	1996	1984	1988	1990	1992	1994	1996	1984	1988	1990	1992	1994	1996
To play games	3.7	2.5	1.9	1.6	1.8	1.3	3.7	1.7	1.7	1.7	1.4	1.6	2.5	1.7	1.4	1.8	2.0	1.6
To learn things	3.1	2.6	1.6	2.0	1.8	1.4	4.5	2.3	2.3	2.1	2.0	1.8	3.0	2.2	1.7	1.9	2.2	1.4
To write stories or papers	3.7	2.5	2.5	2.3	2.6	1.9	3.5	2.6	2.3	1.9	1.7	1.2	2.2	2.1	2.0	1.9	2.0	1.1

SOURCE: U.S. Department of Education, National Center for Education Statistics, National Assessment of Educational Progress, *Almanac: Writing, 1984 to 1996*, 1998.